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the Professor of Geology, but also a Canon of the Cathedral, writes in his 'Præterita': "Dr. Buckland was extremely like Sydney Smith in his staple of character; no rival with him in wit, but like him in humor, common sense, and benevolently cheerful doctrine of Divinity . . . Geology was only the pleasant occupation of his own merry life."

With these characteristics of head and heart, a sane mind in a sound body, it may be imagined what an immense impetus Buckland gave to the growth and development of the young science. He was the first president of the Royal Geological Society, and the first president of the British Association for the Advancement of Science, which he invited to meet at Oxford. His papers and memoirs were not numerous, though upwards of fifty, besides three general works; perhaps his volume on Caves, 'Reliquæ Diluvianæ,' was of most lasting value. He was, though at first rejecting Agassiz's theory, one of the first to recognize the fact of the former existence of glaciers in Great Britain.

Buckland was born in 1784 and died in 1856. His last scientific paper appeared in 1849. In 1845 he was appointed by Sir Robert Peel to the deanery of Westminster, and one of the first things he did was to introduce a system of pipe-drainage in Westminster Abbey, the first of its kind ever laid down in London, and which led to the disuse of cesspools and brick sewers throughout that city. He was, then, not only dean and a doorkeeper in that palatial house of the Lord, but he applied his scientific knowledge to the thorough cleansing of its foundations. Cleanliness with the good dean was evidently a synonym of godliness. His sermon delivered in 1848 on the words, 'Wash and be clean,' was almost the first contribution to sanitary science, a subject in which he was far ahead of his time. His interest in medical science, in general

charity and philanthropy, in building churches and schools, was informed and enlightened by his early geological training and advanced ideas. When, in 1846, the famine crept over Ireland, and even into England, he met the difficulty while living in his summer house at Islip, and among other wise and kindly acts he supplied the village shops with sacks of hominy and Indian corn. Here also he built a recreation room for the village lads, the forerunner of our boys' clubs and kindred associations.

The story of Buckland's brilliant and useful life is in most respects well told; the illustrations are amusing and often instructive, and we warmly recommend the book as most entertaining reading for geologists, young and old, and indeed for all lovers of nature. A. S. PACKARD.

GEOLOGY.

Report on the Iron Mountain Sheet, by Arthur Winslow, E. Haworth, Frank L. Nason and others. ARTHUR WINSLOW, State Geologist, Mo. Geol. Surv. 1894.

This is the third number of the same series of reports as the Bevier sheet and covers an area of about 250 square miles in portions of Iron, St. Francois and Madison counties. As in the others, the principal feature is the map showing the topography and the geology. This was constructed by Messrs. Haworth, E. H. Lonsdale and C. F. Marbut and is similar in scale and contour interval to the one described above. It is also accompanied by a sheet of columnar and cross sections, showing the structure of Iron mountain and Pilot knob. In the text the peculiar topography of the region, as well as the other physiographic features, are described by Mr. Winslow. Mr. Haworth contributes the portion on the geology of the crystalline rocks and Mr. Winslow that on the geology of the Paleozoic rocks. The economic geology of the iron

ores is treated of by Mr. Frank L. Nason, the author of the report on Iron Ores, published by the Missouri Survey in 1892. The report on the building stones is by Mr. G. E. Ladd.

The first of this series, viz., the Higginsville sheet, was issued in folio form, the text being printed on large sheets of the same size as the maps, somewhat similar to the sheet reports issued by the United States Geological Survey, except that the former was stitched. In these later reports the text is printed in octavo form, while the map with the sheet of sections and a sheet of brief explanatory matter is issued in a folio cover separately. A portion of the edition, however, has the map and sheet of sections printed on thin paper, folded and inserted at the end of the pamphlet. Thus this series of reports have been issued in three forms, which may serve to assist in deciding the best form for publication of future reports for different purposes.

J. D. R.

Preliminary Report on the Rainy Lake Gold Region. By H. V. WINCHELL and U. S. GRANT. Geol. and Nat. Hist. Survey of Minn., 23rd Ann. Rept., pp. 36-105. Jan., 1895.

Considerable excitement has been caused during the last year by the reported discoveries of rich gold-bearing veins at Rainy Lake, on the northern border of Minnesota, and accordingly an examination of this region was made by the Geological Survey of the State. The veins occur in more or less crystalline rocks of Pre-Cambrian age, and can be classed as: (a) fissure veins, (b) segregated veins and (c) fahlbands. The most promising part of the district is in what is known as the Seine River country, in Canadian territory, where there are true fissure veins which furnish a good quality of free-milling ore. Actual mining was conducted during the last summer in but one

place—at the Little American mine, in Itasca county, Minn.; but prospecting and exploitation have been carried on in a number of other places. As yet the development is insufficient to warrant the positive assertion that profitable gold mining can be conducted in the Rainy Lake district, but in several localities the prospects are full of encouragement and promise. The report is accompanied by a geological map of the region.

NOTES AND NEWS.

BIOLOGICAL.

THE January number of the *Geological Magazine* contains a note by Professor H. G. Seeley, on the skeleton of *Pareiasaurus baini*. This remarkable animal is one of the Anomodontia which Professor Seeley has been making known to science from the Karoo or Upper Triassic beds of South Africa. He observes that while there are superficial characters which parallel the labyrinthodont amphibia, there is no doubt the animal finds its place among true reptilia. It is remarkable for the number of sharp recurved teeth upon the palate, together with the teeth in sockets on the alveolar margins of the jaw. Notwithstanding the extremely heavy build of the animal, there is much that recalls the lowest mammalia in the shoulder girdle and the fore and hind limbs. It is the shoulder chiefly which indicates this affinity with the Monotremata. The new knowledge which this animal supplies gives a meaning to the ordinal term by showing the resemblances in the teeth to various groups of animals which would not have been suspected from the reptilian structure of the skull, or the mammalian structure of the extremities. The skeleton is figured, as it now appears mounted in the British Museum, of a total length of seven feet, nine inches. It would be difficult to imagine a more grotesque quadruped. Those who have had experi-